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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,320	01/31/2002	Jonathan S. Stamler	1818.1030-003	1921

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EXAMINER	
GUPTA, ANISH	
ART UNIT	**PAPER NUMBER**
1654	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/066,320	STAMLER ET AL.	
	Examiner	Art Unit	
	Anish Gupta	1654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31,32 and 34-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-32, 34-38, 40-41* is/are rejected.

7)☒ Claim(s) *39 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1-18-07 has been entered.

2. The amendment filed 1-18-07 is acknowledged. Claims 31-35 were amended. Claims 36-43 were added. Claims 31-43 are pending in this application.

3. All rejections made in the previous office action are hereby withdrawn.

New Grounds For Rejections

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is

determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 31-32, 34-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Stamler (US6884773).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The claims are drawn to a method of producing S-nitrosohemoglibn by adding NO to a composition comprising oxyhemoglobin.

The US patent claims "a method for making SNO-oxyhemoglobin comprsing adding NO to an aqeous solution of the oxyhemoglobin in a approximately 10mM phosphate buffer at pH 7.4" (see claim 3). Note that the claim recite that he hemoglobin has to be in oxy-form thereby meeting the limitations of "R structure" as instantly claimed. The reference states that a blood substitute or therapeutic which can be used as an NO donor, and which is free of the vasoconstrictor effects of underivatized Hbs, can be made by obtaining a solution of oxyHb (including solutions stored in the form of oxyHb) and adding NO as dissolved gas, yielding SNO-oxyHb. Buffer conditions and NO:Hb ratios can be optimized, as illustrated in Example 21 and FIG. 19, to yield S-nitrosothiol without significant production of oxidized Hb (metHb). For example, NO added to oxyhemoglobin in 10 mM phosphate buffer, pH 7.4, at a ratio of less than 1:30 NO:Hb resulted in formation of SNO-oxyHb with minimal formation of metHb. This ratio can be increased by varying the buffer

conditions, for example by the use of 10 mM phosphate, 200 mM borate at pH 7.4. The buffer anions as well as the buffer concentration should be chosen carefully. For instance, acetate and chloride have the opposite effect from borate, increasing the formation of metHb and nitrite at 200 mM, pH 7.4. (see col. 16, lines 38-55) Although the US patent is silent with respect to "preserving the redox chemistry," since the US patent claims the same end product, nitrsohemoglobin, with the same starting material, oxyhemogloobin, with same buffer, 10 mM phosphate, the redox chemistry would necessarily have to be maintained and the ratios of the free NO to heme would be the same. Further, since the redox chemistry is maintained, redox modifiers would have to be present during the reaction.

5. Claims 31-32, 34-38 and 40-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Stamler (US 6911427).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The claims are drawn to a method of producing S-nitrosohemoglibn by adding NO to a composition comprising oxyhemoglobin.

The reference teaches NO added to oxyhemoglobin in 10 mM phosphate buffer, pH 7.4, at a ratio of less than 1:30 NO:Hb resulted in formation of SNO-oxyHb with minimal formation of metHb. (see col. 21, lines 54-55). Although the US patent is silent with respect to "preserving the

redox chemistry," since the US patent claims the same end product, nitrsohemoglobin, with the same starting material, oxyhemogloobin, with same buffer, 10 mM phosphate, the redox chemistry would necessarily have to be maintained and the ratios of the free No to heme would be the same. Further, since the redox chemistry is maintained, redox modifiers would have to be present during the reaction.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 31-32, 34-38 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Stammler et al. (WO98/34955).

The claims are drawn to a method of producing S-nitrosohemoglibn by adding NO to a composition comprising oxyhemoglobin.

The reference teaches NO added to oxyhemoglobin in 10 mM phosphate buffer, pH 7.4, at a ratio of less than 1:30 NO:Hb resulted in formation of SNO-oxyHb with minimal formation of metHb. (see page 48, lines). Although the US patent is silent with respect to "preserving the redox chemistry," since the US patent claims the same end product, nitrsohemoglobin, with the same starting material, oxyhemogloobin, with same buffer, 10 mM phosphate, the redox chemistry would necessarily have to be maintained and the ratios of the free No to heme would be the same. Further, since the redox chemistry is maintained, redox modifiers would have to be present during the reaction. The instant specification states Redox chemistry" refers to the transfer of NO from the

heme Fe to cysteine on the .beta. subunit with the loss of an electron. See, for example, WO 98/34955 regarding the conversion of iron nitrosyl-hemoglobin to SNO-hemoglobin.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 31-32, 34-38, 40-41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 6,884, 773. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

The claims are drawn to a method of producing S-nitrosohemoglibn by adding NO to a composition comprising oxyhemoglobin.

The US patent claims "a method for making SNO-oxyhemoglobin comprsing adding NO to an aqeous solution of the oxyhemoglobin in a approximately 10mM phosphate buffer at pH 7.4" (see claim 3). Note that the claim recite that he hemoglobin has to be in oxy-form thereby meeting the limitations of "R structure" as instantly claimed. Although the US patent is silent with respect to

"preserving the redox chemistry," since the US patent claims the same end product, nitrsohemoglobin, with the same starting material, oxyhemogloobin, with same buffer, 10 mM phosphate, the redox chemistry would necessarily have to be maintained. Further, since the redox chemistry is maintained, redox modifiers would have to be present during the reaction.

8. Claims 31-32, 34-38 and 40-41 are directed to an invention not patentably distinct from claim 3 of commonly assigned 6,884,773. Specifically, for the reasons set forth in the previous office action.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned U 6,884,773, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

9. Claims 39 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anish Gupta whose telephone number is (571)272-0965. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang, can normally be reached on (571) 272-0562. The fax phone number of this group is (571)-273-8300.

3/19/09

Anish Gupta
Patent Examiner